Scaling Laws for a Nanoflare Heated Solar Corona

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The concept that solar corona is heated by numerous small flare-like events dubbed "nanoflares" is considered. The hot corona is viewed as an ensemble of high-temperature elemental magnetic filaments created within the coronal magnetic field by randomly distributed impulsive heating events. It is shown that it allows to predict various signatures of X-ray coroanl loops without specifying details of the heating process. In particular, dependence of the temperature, filling factor and emission measure on the length of the loop and strength of the coronal magnetic field is derived. The obtained scaling laws fit reasonably with observational data.